

CLAIMS:

1. A system for demodulating narrowband signals from a received signal, the system comprising:

a downconverter operative to downconvert the received signal;

5 and

a baseband processor in electrical communication with the downconverter, the baseband processor being operative to decode the narrowband signal from the received signal.

2. The system of Claim 1 wherein the downconverter comprises at least one analog to digital converter operative to convert the received signal to a digital signal.

3. The system of Claim 2 wherein the downconverter comprises at least one demodulator operative to downconvert the received signal.

4. The system of Claim 3 wherein the demodulator is a quadrature demodulator operative to demodulate the received signal into two signals shifted in phase.

5. The system of Claim 4 wherein the downconverter comprises a mixer operative to mix the received signal prior to demodulation.

6. The system of Claim 5 wherein the downconverter further comprises an amplifier operative to increase the gain of the received signal prior to demodulation.

7. The system of Claim 1 further comprising an antenna in electrical communication with the downconverter and operative to detect the received signal.

5 8. The system of Claim 1 wherein the baseband processor is configured to filter the received signal into a wideband channel and a narrowband channel.

9. The system of Claim 1 wherein the baseband processor is operative to decode a narrowband signal having a bandwidth of about 30 kHz.

10. The system of Claim 1 wherein the baseband processor is operative to decode wideband signals as well as narrowband signals.

10 11. The system of Claim 10 wherein the narrowband signals have a bandwidth of about 30 kHz and the wideband signals have a bandwidth of about 200 kHz.

15 ~~12.~~ A method of demodulating narrowband signals from a received signal with a downconverter and a baseband processor, the method comprising the steps of:

- a) downconverting the received signal with the downconverter; and
- b) decoding the narrowband signal from the received signal with the baseband processor.

20 13. The method of Claim 12 wherein step (b) further comprises decoding a wideband signal from the received signal with the baseband processor.

14. The method of Claim 13 wherein step (b) comprises decoding narrowband signals having a bandwidth of about 30 kHz and wideband signals having a bandwidth of about 200 kHz.

5 15. The method of Claim 12 wherein step (a) comprises converting the received signal to a digital signal with an analog to digital converter.

16. The method of Claim 15 wherein step (a) comprises demodulating the received signal with a quadrature demodulator prior to converting the signal to a digital signal.

10 17. The method of Claim 16 wherein step (a) comprises mixing the received signal prior to demodulation with the quadrature demodulator.

18. The method of Claim 17 wherein step (a) comprises amplifying the received signal prior to mixing.

19. The method of Claim 18 wherein step (a) comprises detecting the signal prior to amplification.

20. A wireless wideband receiver operative to receive at least one 200 kHz (wideband) channel, the receiver comprising:

an antenna operative to detect a received signal;

5 a switch filter in electrical communication with the antenna, the switch filter being operative to switch between the received signal and a transmitted signal;

an amplifier in electrical communication with the switch filter, the amplifier being operative to increase the gain of the received signal;

10 a mixer in electrical communication with the amplifier, the mixer being operative to mix the received signal with a radio frequency oscillation signal;

a demodulator in electrical communication with the mixer, the demodulator being operative to demodulate the received signal with an intermediate frequency oscillation signal;

15 an analog to digital converter in electrical communication with the demodulator, the analog to digital converter being operative to convert the received signal to a digital signal; and

20 a baseband processor in electrical communication with the analog to digital converter, the baseband processor being configured to decode the narrowband channel from the received signal.

21. The receiver of Claim 20 wherein the baseband processor is further configured to decode a wideband channel.

22. The receiver of Claim 21 further comprising a radio frequency phase lock loop in electrical communication with the mixer, the radio frequency  
25 phase lock loop being operative to generate the radio frequency oscillation signal.

23. The receiver of Claim 22 further comprising an intermediate frequency phase lock loop in electrical communication with the demodulator, the intermediate frequency phase lock loop being operative to generate the intermediate frequency oscillation signal.

5 24. The receiver of Claim 23 wherein the demodulator is a quadrature demodulator operative to demodulate the received signal into two demodulated signals having quadrature phase.

10 25. The receiver of Claim 24 wherein the analog to digital converter comprises two analog to digital converters operative to convert the two received signals to digital signals.

26. The receiver of Claim 25 wherein the wideband channel has a bandwidth of about 200 kHz and the narrowband channel has a bandwidth of about 30 kHz.

15 ~~27~~ A system for receiving narrowband signals from a received signal comprising:

means for demodulating the received signal;  
means for converting the received signal to a digital received signal; and  
means for decoding the narrowband signal from the digital  
20 received signal.

28. The system of Claim 27 wherein the means for decoding the narrowband signal is configured to additionally decode wideband signals.

29. The system of Claim 28 wherein the means for decoding the narrowband and wideband signals is a digital baseband processor.

30. The system of Claim 29 wherein the means for demodulating the received signal is a demodulator.

5 31. The system of Claim 30 wherein the demodulator is a quadrature demodulator.

32. The system of Claim 31 wherein the means for converting the received signal to a digital received signal is an analog to digital converter.

10 33. The system of Claim 32 wherein the narrowband signals have a bandwidth of about 30 kHz and the wideband signals have a bandwidth of about 200 kHz.